REMARKS

Claims 1-7, 9-12, and 14-20 are pending and under examination.

In the Final Office Action[1] identified above, the Examiner:

a) rejected claims 1-7, 9-12, and 14-20 under 35 U.S.C. § 112, second paragraph, as being indefinite;

b) rejected claims 1-5, 9, 10, 14-17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wreede et al. (U.S. Patent No. 4,789,211, "Wreede '211");

c) rejected claims 1-7, 9-12, 14-17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede et al. (U.S. Patent No. 4,329,409, "Wreede '409") or Kurland et al. (U.S. Patent No. 4,318,970, "Kurland");

d) rejected claims 1-7, 9-12, 14-17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede '409 or Kurland, further in view of Lawrence et al. (U.S. Patent Publication No. 2005/0136333 A1, "Lawrence") or Mishima et al. (U.S. Patent Publication No. 2002/0096995 A1, "Mishima");

e) rejected claims 1-5, 9, 10, and 14-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigoma et al. (JP 2002-123949, "Horigoma") in view of Wreede '211;

[1] The Final Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Final Office Action.

f) rejected claims 1-7, 9-12, and 14-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211 combined with Wreede '409 or Kurland;

g) rejected claims 1-7, 9-12, and 14-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211 combined with Wreede '409 or Kurland, and further in view of Lawrence or Mishima; and

h) rejected claims 1-7, 9-12, and 14-20 on the ground of nonstatutory obvious-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,031,037 ("Hirao") in view of Wreede '211 combined with Wreede '409 or Kurland.

By this amendment, Applicants have amended claims 1, 15, and 16 to more appropriately define their invention. Support for the proposed claim amendments may be found in the Specification at, for example, page 5, lines 24-27, and page 6, line 36 to page 7, line 12.

Claims 1-7, 9-12, and 14-20 were rejected under 35 U.S.C. § 112, second paragraph. In response, Applicants have amended independent claims 1, 15, and 16 to correct the typographical error as suggested by the Examiner. The Examiner should thus withdraw the rejection under 35 U.S.C. § 112, second paragraph.

Claims 1-5, 9, 10, 14-17, 19, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211. Applicants respectfully traverse the rejection, because a *prima facie* case of obviousness has not been established.

To establish a *prima facie* case of obviousness, the prior art reference (separately or in combination) must teach or suggest all the claim limitations. *See*

M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006). "[I]n formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed." *USPTO Memorandum* from Margaret A. Focarino, Deputy Commissioner for Patent Operations, May 3, 2007, p. 2. "[T]he analysis supporting a rejection ... should be made explicit" and it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the manner claimed." Id. (citing *KSR Int'l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. Apr. 30, 2007)).

Here, a *prima facie* case of obviousness has not been established because Wreede '211 fails to teach or suggest every element recited in amended claims 1, 15, and 16. In particular, Wreede '211 fails to teach or suggest at least the "first inorganic intermediate layer being a diffusion barrier for organic compounds ... wherein ... the first inorganic intermediate layer includes a material selected from a group consisting of magnesium fluoride, calcium fluoride, zirconium fluoride, palladium fluoride, barium fluoride, cesium bromide, cesium iodide, magnesium oxide, aluminum oxide, titanium oxide, chromium oxide, zinc oxide, yttrium oxide, zirconium oxide, tellurium oxide, cerium oxide, hafnium oxide, tantalum oxide, boron nitride, aluminum nitride, zirconium nitride, silicon carbide, zinc sulfide, barium titanate, and diamond," as recited in claims 1 and 15 and similarly recited in amended claim 16.

Fig. 2 of Wreede '211, for example, discloses a hologram assembly 10 including hydrophobic substrate layers 12 and 14, coating of a moisture barrier 15 onto one or both sides of the hydrophobic layers 12 and 14, a transparent water absorbent

substrate layer 16, and an emulsion layer 18. Wreede '211, col. 2, lines 12-48. The emulsion layer 18 comprises photopolymers such as DMP-128, and is exposed to an interference pattern to record a latent image thereon. Wreede '211, col. 2, line 62 to col. 3, line 13. Further, Fig. 3 of Wreede '211 discloses a holographic assembly 30 in which "the water absorbent layers 16 and 24 are adhesive (such as Norland 61)." Wreede '211, col. 3, lines 44-46.

The Examiner asserted that "Wreede et al. '211 shows figure 2, where moisture barriers (15) are applied to the polymeric substrates (14, 12, 20 and 22), layers 16 and 24 are norland adhesive and the recording layer is layer 18." Final Office Action at page 2. The Examiner also stated that "[i]t would have been obvious to use polystyrene, PMMA or polycarbonate as the substrates, tin oxide, indium oxide or silicon dioxide as the barrier layer material and to use DMP-128 as the photosensitive material." Final Office Action at page 3. Thus, the Examiner appears to contend that the hydrophobic substrate 12, the moisture barrier 15, and the emulsion layer 18 of Wreede '211 correspond to the claimed "plastic substrate," "first inorganic intermediate layer formed on the first surface of the plastic substrate," and "organic recording layer being formed on the first inorganic intermediate layer" of claim 1, respectively.

The Examiner additionally asserted regarding the moisture barrier 15 of Wreede '211 that "[t]he benefit ascribed to the coating by the applicant is inherent to the resulting product, which is disclosed as preventing the migration of water ... so they would inherently prevent the migration of larger molecules ... **The examiner notes that these barrier materials are the same materials recited in the claims**." See Final Office Action at page 3. Thus, the Examiner appears to argue that the moisture barrier

15 of Wreede '211 would not only block the water molecules, but also prevent the migration of larger molecules such as low molecular organic compounds.

However, Applicants note Wreede '211 teaches that the moisture barrier 15 may be a vapor-deposited layer of silicon dioxide, tin oxide, or indium oxide. See col. 2, lines 34-35. Wreede '211 thus fails to teach or suggest using any of the materials recited in claims 1, 15, and 16 used as the first inorganic intermediate layer, which is a diffusion barrier for organic compounds.

For at least the reason discussed above, no *prima facie* case of obviousness has been established. Independent claims 1, 15, and 16 are allowable over Wreede '211, and dependent claims 2-5, 9, 10, 14, 17, 19, and 20 are allowable at least due to their dependence from claim 1 or claim 16. The Examiner should withdraw the rejection of claims 1-5, 9, 10, 14-17, 19, and 20 over Wreede '211.

Claims 1-7, 9-12, 14-17, 19, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede '409 or Kurland. Applicants respectfully traverse the rejection, because a *prima facie* case of obviousness has not been established. The cited references, taken alone or in combination, fail to teach or suggest at least the "first inorganic intermediate layer being a diffusion barrier for organic compounds ... wherein ... the first inorganic intermediate layer includes a material selected from a group consisting of magnesium fluoride, calcium fluoride, zirconium fluoride, palladium fluoride, barium fluoride, cesium bromide, cesium iodide, magnesium oxide, aluminum oxide, titanium oxide, chromium oxide, zinc oxide, yttrium oxide, zirconium oxide, tellurium oxide, cerium oxide, hafnium oxide, tantalum oxide, boron nitride, aluminum nitride, zirconium nitride, silicon carbide, zinc sulfide, barium

titanate, and diamond," as recited in amended claims 1 and 15 and similarly recited in amended claim 16.

As noted above, Wreede '211 fails to teach or suggest this claimed feature. Wreede '409 and Kurland both fail to compensate for the shortcoming of Wreede '211.

Kurland discloses a pre-holographic element, as shown in Fig. 1, including a hydrophobic substrate 10, a moisture barrier layer 11, and a hydrophilic photosensitive material 12. A hologram is formed by exposing the photosensitive layer 12 to an actinic interference pattern to record a latent image thereon and developing the photosensitive layer 12. See col. 1, lines 64-67 and col. 4, lines 22-32.

Wreede '409 also discloses a pre-holographic element similar to the structure of Kurland, including a hydrophobic substrate 10, a moisture barrier layer 11, and a hydrophilic photosensitive material 12. See Fig. 1. The hydrophilic photosensitive material 12 includes materials such as dichromated gelatin, photographic silver halide emulsion, diazo gelatin and other gelatin-based photosensitive materials. Wreede '409, col. 4, lines 61-65.

The Examiner contended that "silicon nitrides are used as moisture barrier layer that it would have been obvious to [use] silicon nitride as the barrier material in place or in addition to silicon oxide based upon the teachings of Wreede et al. '409." See Final Office Action at page 4. The Examiner thus appears to apply Wreede '409 to teach using silicon nitride as a moisture barrier layer in addition to silicon dioxide, tin oxide, and indium oxide taught by Wreede '211. However, the combination of Wreede '211 and Wreede '409 or Kurland only teaches using tin oxide, indium oxide, silicon dioxide, and silicon nitride as a moisture barrier in order to prevent moisture transfer, and would

still fail to teach or suggest using any of the materials recited in amended claims 1, 15, and 16 as a diffusion barrier for organic compounds. The moisture barrier layer of Wreede '211, Wreede '409, and Kurland therefore cannot correspond to the claimed "first inorganic intermediate layer," which is a diffusion barrier for organic compounds. For at least the above reason, no *prima facie* case of obviousness has been established regarding independent claims 1, 15, and 16.

Additionally, Applicants respectfully point out that the manufacturing method of claim 15 reciting, for example, "forming a multilayered film ... and sticking the multilayered film to a plastic substrate by an adhesive," is neither taught nor suggested by any of the applied references. Thus, claim 15 should be allowable over the applied references at least for this additional reason.

Therefore, Wreede '211 and Wreede '409 or Kurland, taken individually or in combination, fail to teach or suggest each and every element of claims 1, 15, and 16, and dependent claims 2-7, 9-12, 14, 17, 19, and 20 are allowable at least due to their dependence from claim 1 or claim 16. The Examiner should withdraw the rejection over the combination of Wreede '211 and Wreede '409 or Kurland.

Claims 1-7, 9-12, 14-17, 19, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede '409 or Kurland, further in view of Lawrence or Mishima. Applicants respectfully traverse the rejection, because a *prima facie* case of obviousness has not been established. The Examiner relies on Lawrence for disclosure of "various substrate materials" and Mishima for "moisture barrier materials including metals, metal oxides ... and fluorides ... used in optical display devices." See Final Office Action at page 5. However, each of Lawrence and Mishima

fails to cure the deficiencies of Wreede '211, Wreede '409, and Kurland because Lawrence and Mishima also fail to teach or suggest using the claimed materials as a diffusion barrier for organic compounds. Therefore, the cited references as combined still fail to teach or suggest the recording medium of claim 1 including a "first inorganic intermediate layer" which is a diffusion barrier for organic compounds, for example.

Moreover, one of ordinary skill in the art would **not** have been motivated to combine the teachings of Lawrence and Mishima with Wreede '211, Wreede '409, and Kurland in order to derive the claimed recording medium including "the first inorganic intermediate layer being a diffusion barrier for organic compounds ... the first inorganic intermediate layer includes a material selected from a group consisting of magnesium fluoride, calcium fluoride, zirconium fluoride, palladium fluoride, barium fluoride, cesium bromide, cesium iodide, magnesium oxide, aluminum oxide, titanium oxide, chromium oxide, zinc oxide, yttrium oxide, zirconium oxide, tellurium oxide, cerium oxide, hafnium oxide, tantalum oxide, boron nitride, aluminum nitride, zirconium nitride, silicon ca rbide, zinc sulfide, barium titanate, and diamond," as required by amended claim 1.

Mishima, in particular, does not contain any teaching of a diffusion barrier for organic compounds in a holographic optical recording medium. Instead, Mishima uses metals, metal oxides, metal fluorides, and various organic compounds as moisture barrier substances in light emitting devices. See Mishima, paragraph [0110]. Therefore, none of the references provide any suggestion or reason to combine Mishima's LED having moisture barrier substances with holograms of Wreede '211, Wreede '409, and Kurland in order to teach the claimed "first inorganic intermediate layer," which is a diffusion barrier for organic compounds.

Claims 1-5, 9, 10, and 14-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211; claims 1-7, 9-12, and 14-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211 combined with Wreede '409 or Kurland; and claims 1-7, 9-12, and 14-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211 combined with Wreede '409 or Kurland, and further in view of Lawrence or Mishima. Applicants respectfully traverse the rejection, because a *prima facie* case of obviousness has not been established. The cited references, taken individually or in combination, fail to teach or suggest each and every element of independent claims 1, 15, and 16.

The deficiencies of Wreede '211, Wreede '409, Kurland, Lawrence, and Mishima are noted above. Horigoma fails to compensate for these deficiencies, because Horigoma is also silent regarding using any of the claimed materials as a diffusion barrier for organic compounds. Therefore, the cited references, taken alone or in combination, fail to teach or suggest at least the claimed "first inorganic intermediate layer," which is a diffusion barrier for organic compounds.

Finally, claims 1-7, 9-12, and 14-20 were rejected on the ground of nonstatutory obvious-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,031,037 ("Hirao") in view of Wreede '211 combined with Wreede '409 or Kurland. Applicants respectfully traverse the rejection. The Examiner relies upon claims 1-11 of Hirao. However, claims 1-11 of Hirao fail to teach or suggest the above-discussed elements of independent claims 1, 15, and 16. In fact, the Examiner contends modifying claims 1-11 of Hirao by "adding moisture barrier layers, such as taught by

Wreede et al. '211 to prevent moisture damage and shifting of the replay." See Office Action at page 5. However, since Wreede '211, Wreede '409, and Kurland fail to teach the claimed first inorganic intermediate layer of independent claims 1, 15, and 16 as discussed above, these references fail to cure the deficiencies of Hirao.

Therefore, independent claims 1, 15, and 16 are allowable over the cited references, and claims 2-7, 9-12, 14, and 17-20 are allowable at least due to their dependence. The nonstatutory obvious-type double patenting rejections of claims 1-7, 9-12, and 14-20 over the cited references should be withdrawn.

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: October 4, 2007

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